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PARTNERS IN AGRICULTURAL PROGRESS

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Talk by Dr. Byron T. Shaw, Administrator, Agricultural Research Service, U. S. Department of Agriculture, before the Florida Citrus Production Credit Association, Orlando, Fla., April 14, 1964.

I am happy to celebrate with you the thirtieth anniversary of your Association, and to take part in a program that recognizes some of the contributions that Senator Spessard L. Holland has made to Florida agriculture and the welfare of Florida people.

These contributions are outstanding, but if they stopped at the Florida border you would probably have invited a Florida speaker. The fact is that Senator Holland's contributions to agricultural research are felt across the Nation.

He has influenced the course of agricultural research for a quarter of a century. He was Governor from 1941 to 1945, the crucial period when food was a basic weapon of war. He entered the United States Senate in 1946 to become a key figure in developing policies for the Nation's agriculture.

It has been my privilege to work for many years with him as a member of Senate committees that involve agriculture and forestry. My closest associations have been with the Subcommittee on Appropriations for the U. S. Department of Agriculture, on which he served for many years. His chairmanship of this Subcommittee, which he took over in 1963, places in his hands even more responsibility for our agricultural economy.

Let's consider some of the developments that have taken place in agriculture in recent decades -- particularly during the post-war years -- and their impact on your State and the Nation.

For one thing, there is a growing trend to cooperation in most of our endeavors. Partnership is essential to agricultural progress.

The long and successful history of cooperatives, such as this Association of yours, proves this. In a sense, you hold the purse strings of the Number One industry of the State. You lead the world in the production of oranges, grapefruit, and tangerines.

Agricultural research is also a partnership. It's becoming more of a cooperative enterprise all the time.

Seldom can a scientist claim entire credit for a piece of original research. Today, the list of cooperators on a research achievement is often as long as the credit lines of a television movie.

This is as it should be.

We appreciate greatly the tremendous cooperation we have enjoyed in Florida on both research and regulatory programs. If I were to mention every cooperating agency on each undertaking, I'd keep you here half the afternoon. We cherish the fine relationships we have had with the University of Florida, the State Experiment Station and Extension Service, the Florida Department of Agriculture, the Florida Citrus Commission, and the support of the growers and processors of agricultural products. You know the stellar role played in supporting citrus research by the Florida Citrus Mutual, the Florida Citrus Exchange, various cooperatives and processors, and other industry groups. Similar credits go to such organizations in other industries.

The benefits of such cooperation have been augmented by increased funds for Federal research. Since 1946, when Senator Holland came to Washington, the total appropriations made to USDA for research have more than quadrupled. So has the money for ARS research in Florida. It has been well spent.

Many of you may recall the sad state of our Horticultural Field Laboratory here at Orlando in 1951. The buildings were so dilapidated that on rainy days our scientists had to stand on platforms in the fruit-treating room to keep out of water. You know of Senator Holland's efforts in getting funds for the buildings we now enjoy.

Later on, Florida citrus growers and industry leaders formed the Florida Citrus Research Foundation and purchased the 500-acre Foundation Farm near Leesburg for our research use. Your General Manager, Mr. Whitmore, was chairman of that Foundation; he has been a leader in furthering citrus research on many other occasions. The rent-free lease you gave us on this land for 99 years was accepted gratefully. We now have buildings there, and plantings are going in as scheduled. It is a fine location for the largest collection of citrus varieties and species in the world.

This collection has been a source of root stocks that impart more cold hardiness to tops than do commercial varieties now being planted. Our scientists are trying to find the biochemical reason for this. The search for growth regulators that will cause citrus trees to go dormant, and thus resist cold better, goes on here and in research abroad.

Research abroad is financed by foreign currencies received from the sale of American agricultural commodities that are surplus to our needs. Basic research projects that affect citrus are under way in such countries as India, Israel, Egypt, and Brazil. The work we do in foreign countries is for the benefit of our American industry, such as exploration for new and more hardy germ plasm and root stocks.

Plant explorations can yield such benefits as the tangelos that our Dr. Swingle introduced back at the beginning of this century, and the high-quality tangerine hybrids we introduced more recently.

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You know the need for mechanizing citrus harvesting. In 1962, such research was started at Winter Haven. The cooperative work already shows promise of reducing the \$50 million that picking citrus by hand costs growers in the United States every year. Inertia shakers and fruit catchers have been built and tested, and results are very encouraging. Research on shakers and on other harvesting methods, such as wind removal, is continuing.

The continuing, long-range research that is going on in economics and marketing will also cut costs and increase efficiency for the citrus industry. I think the shipment of refrigerated grapefruit that traveled from Lakeland to Basel, Switzerland, in the original trailer a year or so ago marked a "first" that has great implications. Such devices for sending trailers "piggyback" and "fishyback" may improve exports by lowering handling costs and reducing quality losses of many other U. S. products besides citrus.

On such research Senator Holland was again in on the ground floor. Last year, the Washington chapter of the American Marketing Association designated him a Pioneer in Agricultural Marketing. They cited him for giving generously of his time and energies to the development and strengthening of marketing services and agencies, particularly in the Florida citrus industry.

We frequently point to the development of frozen citrus concentrate at Winter Haven as one of the greatest examples of cooperative research. Perhaps it is too much to expect new findings from there that will immediately revolutionize the citrus industry as frozen concentrates did. However, the marketing of citrus in dehydrated powder form has great potential. This is being researched cooperatively with the industry at the U. S. Fruit and Vegetable Products Laboratory at Winter Haven.

Senator Holland was a moving force in obtaining funds in 1957 for the splendid facilities there, and the Florida Citrus Commission continues its strong support with funds, equipment, and manpower.

In addition to the development of new markets for citrus, new ways must be found to control its pests.

Cooperative research and control activities have scored massive victories against some enemies of citrus, and are keeping others at bay.

Our concern about rapid decline -- tristeza -- is now largely concentrated on keeping the insects known to spread it in foreign areas out of this country. As to spreading decline, which is caused by the burrowing nematode, our cooperative program continues to close in on this problem, and the development of resistant rootstock by ARS and the Florida Experiment Station give us hope for the future in being able to live with this disease. In research on the citrus nematode, we're trying to find a treatment for use in Florida that will be as effective as nemagon is in Arizona.

At Lake Alfred, cooperative studies are under way on biological control of citrus insects. At a few Florida orchards, only parasites and predators are used to control insect pests. In certain locations, it's working very well.

Senator Holland says he was raised under a citrus tree, and he is acutely conscious of the destruction that diseases and pests can cause this crop. He remembers the successful campaign to eradicate citrus canker from Florida and the United States, and the first invasion of the Mediterranean fruit fly in 1929, which was very disrupting to Florida's economy. Thanks to research, the more recent Medfly invasions have been eradicated with less disturbance to the economy each time.

In discussing the improvement in Medfly eradication methods, Senator Holland once said, "It is just an example, I think, of what it means for us to keep research under way, because we never know when we are going to need that knowledge."

Better Medfly detection methods that resulted from research in Hawaii and elsewhere have improved eradication techniques. With these methods, we are now cooperating on an international scale in a far-flung detection program. Thousands of small traps are hanging in fruit trees of North and Central America and the West Indies. They are there to give warning if the Medfly should spread north from the Central and South American countries it infests.

No piece of research illustrates the unpredictable thrust of an idea better than that which made it possible to eradicate the screwworm from Florida and the Southeast a few years ago. The originator and several developers of this concept, the sterility principle, worked here at Orlando at the entomology laboratory during the war years.

As you know, the sterility principle involves the sexual sterilization and release of enough sterile males in a pest population to mate with natural populations in overwhelming numbers. As no offspring result from such matings, the pest brings about its own destruction. The method is more effective than any conventional method of insect control.

The same technique that rid the Southeast of screwworms is now being used to combat them in the Southwest. The screwworm has been virtually eliminated from the United States as far west as the New Mexico-Arizona border. Continued control will depend on maintenance of the artificial barrier zone of sterile flies that we have established along the Mexico-U. S. border to prevent reinfestations.

Chemicals that sterilize some pests have now been found that can be used as an alternate to radiation. Other interesting approaches to insect control are based on the attraction of insects to host plants and animals, to the opposite sex, and to lights, sounds, and other forms of radiant energy. Such attractants are sometimes teamed with sterilization techniques or with pesticides to wipe out insect enemies.

For example, combined chemical and biological methods last year wiped out two pests, the melon fly and the oriental fruit fly, on an isolated Pacific island. Both are potential threats to Florida fruit.

We are involved cooperatively in exploring the possibility of using the sterility principle against the Medfly in Central America, the Mexican fruit fly along the Texas-Mexican border, and the disease-carrying tsetse fly in Africa.

Sterility methods may eventually be used to control the common housefly and a host of other insects. Biologists are investigating the use of the sterility principle in controlling higher animals and birds when oversize populations make them pests.

This, then, is the way one idea can reach across the world.

Equally far-reaching research was done here at Orlando during World War II. The application of Orlando research on insects affecting man protected troops from insect-borne diseases, and made possible programs that today protect hundreds of millions of people against the pests that carry malaria, encephalitis, yellow fever, typhus, typhoid, dysentery, and cholera.

Last summer we dedicated the new home of the Orlando entomology research team at Gainesville. The 12 acres the expanded facilities occupy on the campus was a gift of the University of Florida. This is our chief national laboratory for the study of insects affecting man and animals.

Cooperative research at Gainesville has developed new knowledge about the biology of the dogfly, or stable fly, which causes such misery to man and animals. This year, scientists plan to try several new concepts for the control of this pest.

Thus our war continues against pests of man, livestock, and plants. But we still must be on guard against pests and diseases from overseas. Our first line of defense against them is maintained at our borders and air and ocean ports. ARS plant and animal quarantine inspectors are on guard there against accidental introduction of exotic diseases and pests of agriculture.

Florida livestock growers know from experience how difficult pests are to get rid of once they are here. Cooperative campaigns have eradicated the cattle fever tick, the African red tick, and vesicular exanthema of swine from the State in the past.

Now Florida is taking a lead in a cooperative campaign to eradicate hog cholera from the United States. No cases of this costly disease have been found in this State this year. Hog vaccination is essential to eradication, and research at our laboratory at Live Oak has helped to make the vaccine more effective.

Campaigns against such animal diseases will continue to aid livestock production in Florida as well as the other States.

You are probably aware of the tremendously valuable research on animal health done by your State experiment station workers. They detected the mineral deficiencies in Florida soils that kept cattle from thriving, and developed means to correct these deficiencies. Your cattle industry could never have developed without this basic knowledge.

Our ARS scientists at Brooksville, who cooperate with the State workers, have an interesting piece of research under way on beef cattle breeding. They've taken two herds of Hereford cattle -- one in Montana and one in Florida -- and sent half of each herd to the other State. The cattle will be bred in each area for several generations, to learn if stock for Florida should be bred and developed here.

Combining grazing with timber production has contributed to the great strides made in beef cattle production in the Southeast during recent years. Research of USDA's Forest Service at Fort Myers has centered on this activity. Senator Holland has strongly supported forestry activities in Florida and has given special attention to research. With forests on more than half the land in Florida, I know every Floridian is interested in this vital part of the State's economy. About \$60 million worth of logs, pulpwood, and other timber products are cut from your forests each year, and this amount is increasing because of reforestation programs and improved forest protection and management.

Florida is a leader in production of naval stores. At Olustee, the Forest Service is seeking ways to increase pine gum production, to lower production costs, and to manage southern pine forests for the most beneficial combination of timber, pine gum, and other forest land benefits.

ARS research conducted at our Naval Stores Laboratory at Olustee has revolutionized the gum naval stores industry. Today centrally located, modern and efficient industrial plants have replaced the inefficient fire stills of the pine forest. Olustee research has made turpentine,

rosin, and pine gum useful in producing synthetic rubber, synthetic lubricants for turbo jet engines, paper sizings and coatings, resins, emulsifying agents, photographic chemicals, and printing inks.

Such important research deserves up-to-date facilities, and I am glad to say that the Congress this year made provision for \$250,000 to expand and modernize the facilities at Olustee. More uses for naval stores need to be developed to provide new industrial markets, because these materials face serious competition from chemical and petroleum products.

I want to mention just one more phase of research in Florida that is important not only to Floridians but to the Nation -- cooperative research on sugarcane. Events in Cuba have made such research more essential to our economy than ever before. At Canal Point, State and ARS scientists are developing sugarcane that is adapted to colder areas than the limited caneland near Lake Okeechobee. Several varieties show a lot of promise.

In all these cooperative enterprises in Florida, we have had the vigorous, continuing support of Senator Holland. You folks see his hand in all of Florida's agricultural progress . . . but I can see his influence at work wherever I go, all over this country.

The effects of work done here are felt far beyond our national borders. And the accomplishments of the future are as unpredictable as today's were a quarter of a century ago.

Agriculture, science and legislation must continue their fruitful partnership. Senator Holland is one who has seen the vision of what they can accomplish together. He is a great friend of research.

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